WHAT IS CLAIMED IS:

1. A method of manufacturing an active matrix substrate, wherein

a laser beam is repeatedly exposed to a semiconductor film formed on a dielectric substrate of an active matrix substrate to produce a polycrystallized semiconductor film, comprising :

intensity modulating said laser beam;

directing and shaping said laser beam to be periodic in at least one direction; and

moving randomly the intensity distribution of the laser beam on said semiconductor film in the periodic direction of said intensity modulation.

2. The method of claim 1, further comprising:

moving the laser beam relatively in a given direction with respect to said dielectric substrate at a constant velocity to expose said semiconductor film a plurality of times to crystallize said semiconductor film, and wherein said laser beam is a pulsed laser beam; and

moving randomly an exposure position of said laser beam to said semiconductor film from one exposure position to another exposure position a plurality of times for a laser beam exposure, in a direction perpendicular to said moving

direction to crystallize said semiconductor film.

3. The method of claim 1, wherein

a coordinate y on said semiconductor film in the periodic direction of said intensity modulation at the point where the laser beam intensity becomes a maximum at the time of said laser beam exposure, may be given by

$$y = na + r$$

where a designates a periodicity of intensity modulation of said laser beam, n designates an integer, r designates a non-negative value smaller than a and which is determined for each exposure, and

in which the difference between the maximum and minimum values of said r is a half or more of periodicity.

4. The method of claim 1, further comprising:

melting, by the exposure of said laser beam, an area smaller than a crystal grain on the crystallized semiconductor film obtained by exposure of said laser beam on said semiconductor film to divide said semiconductor film; and

promoting crystallization around the cores of plural crystal grains thus divided to reconstruct a single crystal grain.

5. The method of claim 4, further comprising:

forming, in a periodic direction of the intensity modulation of said laser beam, a polycrystalline semiconductor film having grain size approximately equivalent to said periodic direction.

6. A method for manufacturing an active matrix substrate including process steps of exposing a laser beam a plurality of times to a semiconductor film formed on a dielectric substrate of the active matrix substrate to crystallize said semiconductor film, comprising:

providing a long axis and a short axis of exposure shape on said semiconductor film to said laser beam and providing a rectangular form laser beam having a periodic intensity modulation in said long axis direction;

moving said laser beam in relation to said dielectric substrate in said short axis direction of said laser beam to said semiconductor film for exposing said semiconductor film a plurality of times to crystallize said semiconductor film; and

moving randomly the intensity modulation of said laser beam on the semiconductor film formed on said dielectric substrate from one laser beam exposure position to another laser beam exposure position in said long axis direction.

7. The method of claim 6, further comprising:

moving randomly the intensity modulation of said laser beam on said semiconductor film from one laser beam exposure position to another laser beam exposure position, except for the displacement distance moved in said short axis direction at a mean velocity.

8. The method of claim 6,further comprising:

using a phase shift mask having a periodicity of the periodicity of said intensity modulation times an integer more than two to maintain a constant distance between said semiconductor film and said phase shift mask to provide periodic intensity modulation of said laser beam.

The method of claim 6, in which

coordinate y on said semiconductor film in the periodic direction of said intensity modulation at the point where the laser beam intensity becomes maximum at the time of said laser beam exposure, may be given by

$$y = na + r$$

where a designates a periodicity of intensity modulation of said laser beam, n to an integer, r to a non-negative value smaller than a and determined for each exposure, and

in which the difference between the maximum and minimum values of said r is a half or more of periodicity.

10. The method of claim 6, further comprising:

melting, by the exposure of said laser beam, an area smaller than a crystal grain on the crystallized semiconductor film obtained by exposure of said laser beam on said semiconductor film to divide said semiconductor film; and

promoting crystallization around the cores of plural crystal grains thus divided to reconstruct a single crystal grain.

11. The method of claim 10, further comprising:

forming, in a periodic direction of the intensity modulation of said laser beam, a polycrystalline semiconductor film having grain size approximately equivalent to said periodic direction.

12. A method of manufacturing an active matrix substrate, by exposing a semiconductor film formed on a dielectric substrate of an active matrix substrate with a laser beam a plurality of times to crystallize the semiconductor film, comprising :

exposing said semiconductor film to a pulsed laser

beam having intensity modulated at first periodicity, and

exposing said semiconductor film to a second modulated pulsed laser beam having a periodicity smaller than said first periodicity.

13. The method of claim 12, further comprising :

exposing, to said semiconductor film exposed with pulsed laser beam having intensity modulated at a first periodicity, a pulsed laser beam having a second periodicity of more than one fifth and less than a half of the modulation period of said first modulated pulsed laser beam in the direction perpendicular to said first periodicity.

14. The method of an active matrix substrate, by exposing a semiconductor film formed on a dielectric substrate of an active matrix substrate with a laser beam a plurality of times to crystallize said semiconductor film, compromising:

providing a long axis and short axis of exposure shape on said semiconductor film to said laser beam and providing a rectangular form having a periodic intensity modulation in said long axis direction;

moving said laser beam in relation to said dielectric substrate in said short axis direction of said rectangular laser beam to said semiconductor film for exposing said semiconductor film a plurality of times to crystallize said

semiconductor film;

wherein exposure occurs by:

exposing said semiconductor film exposed with first modulated pulsed laser beam having intensity modulated at a first periodicity in the short axis direction of said rectangular shape,

and exposing a second pulsed laser beam having a second periodicity of more than one fifth and less than a half of the modulation period of said first modulated pulsed laser beam in the direction perpendicular to said first periodicity; and

moving randomly on said semiconductor film the intensity modulation of said laser beam having said second periodicity in said long axis direction from one pulse laser beam exposure position to another exposure position.

15. An image display device including an active matrix substrate made of a dielectric substrate having a pixel circuit with a matrix array of a number of pixels and a pixel driver circuit located outward from said pixel area, said active matrix substrate comprising:

a plurality of projection arrays of hillocks straightly formed on a polycrystalline semiconductor film deposited on said dielectric substrate;

a straight line of said hillock arrays, which forms

a periodic group of lines provided periodically in a perpendicular direction to said straight line; and

said straight line having an error in said periodic direction of said projection arrays at a constant interval in said perpendicular direction to said periodicity;

in which the amount of error among said straight lines at said constant interval is random.

16. An image display device as in claim 15,wherein:

said projection array of hillocks includes an area in which hillocks having one intersecting boundary are linearly arrayed.

17. An image display device set forth in claim 15, wherein:

said projection lines of said projection arrays of hillocks are periodically placed in a perpendicular direction to said line to form a periodic group of lines;

a group of lines includes an area in which more than two of said lines of said projection arrays of hillocks are formed for a periodicity;

wherein the periodicity of said straight line groups is approximately equal to the grain size in said periodic direction; and

the boundary in a perpendicular direction to said periodic direction is formed in approximate conformity of

any one of lines formed by said array of hillocks for each periodicity.

18. An image display device set forth in claim 15, further comprising:

a thin film transistor using said polycrystalline semiconductor film for the channel.

19. An image display device set forth in claim 18, further comprising:

a plurality of mutually intersecting wirings formed on said dielectric substrate;

a pixel formed in the vicinity of said intersection of wirings to vary the transmittance or reflectance or amount of light emission; and

a thin film transistor formed in said pixel for serving as a switch for selecting said pixel;

wherein said thin film transistor is formed with channel using said polycrystalline semiconductor film.

20. An image display device set forth in claim 18, further comprising:

a plurality of mutually intersecting wirings on said dielectric substrate;

a pixel formed in the vicinity of said intersection

of wirings;

a light emitting element having an organic film formed within said pixel;

a thin film transistor formed within said pixel for driving said light emitting element;

wherein the channel direction of said thin film transistor is in parallel to the periodic direction of the hillocks of said polycrystalline semiconductor film and the length of channel is a multiple of natural number of the periodicity of the hillocks of said polycrystalline semiconductor film.

21. A method of manufacturing an active matrix substrate, comprising:

exposing a laser beam repeatedly to a semiconductor film formed on a dielectric substrate of an active matrix substrate to produce a polycrystallized semiconductor film, wherein the exposing comprises:

intensity modulating an intensity distribution of said laser beam;

directing and shaping said laser beam to be periodic in shape along a long axis direction; and

moving randomly said intensity distribution of the laser beam on said semiconductor film in said long axis

direction within a range as said semiconductor film is moved at a constant speed along a short axis direction perpendicular to said long axis;

melting, by said exposing of said laser beam, an area smaller than a crystal grain on the crystallized semiconductor film obtained by exposure of said laser beam on said semiconductor film to divide said semiconductor film; and

promoting crystallization around cores of plural crystal grains thus divided to reconstruct a single larger crystal grain.

22. The method of claim 21 further comprising:

dividing the semiconductor film into at least a top area and a bottom area along said long axis;

exposing said laser beam first to said top area, starting at a random top starting point along said long axis and finishing at random top finishing point along said long axis as said semiconductor film is moved along said short axis at said constant speed;

moving said semiconductor film diagonally and backwards along said short axis with no laser exposure to a random bottom starting point along said long axis and;

exposing said laser beam to said bottom area starting

at said random bottom starting point along said long axis and finishing at a random top finishing point along said long axis as said semiconductor film is moved along said short axis at said constant speed; and

thereby exposing said top area and said bottom area in multiple passes of said laser beam along said short axis.